



February 20, 2024

Senator Lew Frederick, Co-Chair
Representative Nancy Nathanson, Co-Chair
Joint Committee on Transportation
Special Subcommittee on Transportation Planning

Dear Co-Chairs Frederick and Nathanson and members of the special subcommittee,

During the Deep Dive 3 presentation, special subcommittee members posed several questions about ODOT's ongoing efforts to implement the Urban Mobility Strategy, specifically around tolling and diversion.

Below are ODOT's responses to the questions posed by subcommittee members at the February 9th Deep Dive 3 meeting.

1. Are there other places in the country that are comparable to our region and affected communities, in terms of topography and waterways, that result in residents having few other options to get places other than a tolled facility?

The Elizabeth River Crossings are a strong comparison to the Abernethy Bridge area, as there are a limited number of options for crossing the Elizabeth River. There are also substantial populations as well as significant economic activities on both sides of the river. This all contributes to high demand for a limited number of crossings with no alternatives.

That said, no two places are perfectly comparable, and the models and project design options being developed and used for the toll program are unique and specific to the local context. They reflect local geographic and infrastructural conditions, using data from regional models that include local travel patterns.

2. How does ODOT reconcile tolling causing substantial changes in travel patterns and people eventually getting used to it?

Experience in other areas demonstrates that travel patterns will change right after toll collection begins. This is akin to how traffic patterns change after school starts, for example. People will need time to figure out what works for them given new traffic dynamics. Eventually, travel patterns will reach a new stable state. As people see the benefit of paying a toll for a safer and more reliable trip, they may choose to pay the toll for certain trips based on their specific needs. This could mean that many travelers will return to the tolled facility and that the facility could attract new trips that did not previously travel there.



As presented at the February 9th meeting, some toll diversion is an intended effect of pricing. This diversion will come in many forms, including change in travel time, change in travel mode, and the combining of trips in addition to rerouting. As depicted in the boomerang curve described in Deep Dive 2 (see chart), we don't need a drastic change to improve a congested route. Tolling is a tool to manage demand to maximize throughput as illustrated by [this video](#).

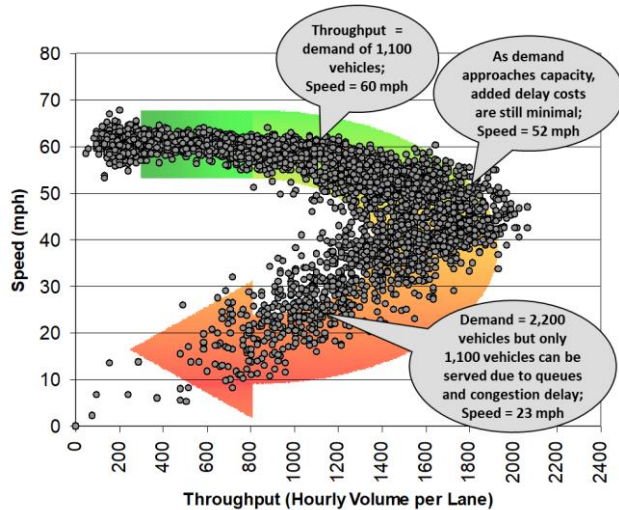
Every project is unique, but we can glean some insights from other projects. On SR 520, WSDOT anticipated a 48% drop in traffic volumes when tolling began (2011). This was close to the observed change at the beginning of toll collection. However, throughout the year, more drivers returned to the corridor and SR 520 bridge traffic volumes neared 70% of pre-toll levels within a year (2011-2012). By the end of the first year, weekday trips across the bridge decreased by 34%, lower than the anticipated decrease. While total cross-lake-peak-period traffic volumes decreased by 6%, 98% of travelers who used the SR 520 bridge during the peak period before tolling continued to travel during the peak period after tolling, but they shifted to another route (I-90 or SR 522) and/or chose to use carpool, vanpool, transit, or a connector (Source: SR 520 Toll Operations and Traffic Performance Summary Report 2012).

3. Is rerouting a temporary effect of tolling?

Long-term traffic patterns will depend on the tolled facility, rates, purpose, and regional transportation options. Tolling will result in various forms of toll diversion (including changing time, mode, route, destination, or combining trips). Some of this toll diversion will be temporary, and some will be permanent. When tolling begins, there will be higher levels of temporary rerouting as drivers adapt to the new conditions—like how travel patterns shift after school starts. Eventually, travel patterns will stabilize, and some of those who rerouted will return to the tolled facility.

For the Regional Mobility Pricing Project (RMPP) on I-5 and I-205, some toll diversion is necessary to accomplish the goal of rebalancing traffic to allow existing capacity to serve travel demand more efficiently. Therefore, by design, we will see some level of diversion as a permanent effect of this project, allowing the I-5 and I-205 interstates to operate more efficiently with decreased congestion.

The toll on the Abernethy Bridge is primarily intended to pay for construction on the bridge, but it will also use variable-rate tolls to offer some congestion management near the bridge. As we





work to revise the analysis for the I-205 Toll Project, we expect a single toll at the Abernethy Bridge to cause less rerouting in the long-term than was modeled in the original project when there was tolling at both the Abernethy and Tualatin River bridges.

As part of implementing the monitoring plan, we will measure baseline conditions before tolling begins and compare to conditions after tolling starts to evaluate the effects of tolling on rerouting and other forms of toll diversion.

4. Can ODOT provide additional context about the other aspects of the Scudder Falls Bridge project including additional rapid transit, added pedestrian/bike lanes, additional vehicle lanes, etc.?

The purpose of sharing Scudder Falls bridge as a case study was to provide an example of toll diversion analysis prior to implementation and how it can be a relatively accurate predictor of driver behavior after tolling is implemented. This example was not meant to be a one-to-one comparison to ODOT's toll projects or Oregon's transportation systems.

What other aspects were included in the Scudder Falls Bridge project? Who paid for them?

In addition to the high-capacity river bridge, the project yielded widened approach roadways, safer flanking highway interchanges, a shared-use path for pedestrians and bicyclists, drainage and wetlands upgrades, and an all-electronic tolling facility that keeps traffic moving.¹

The Delaware River Joint Toll Bridge Commission (DRJTBC) paid for all aspects of the project including the bridge replacement, bike/pedestrian facility, interchange improvements, and additional travel lanes, using proceeds from the sale of bonds backed by the toll revenues of their system of bridges and cash on hand from toll collection.

While the bridge was built wide enough to accommodate potential future bus rapid transit service, there are currently no transit services provided across the Scudder Falls Bridge.

Who has authority over the bridge?

The DRJTBC has sole authority over the Scudder Falls Bridge. The Commission was established by a federal Compact in 1935. In 1987, the Compact was modified to assign the Commission with full financial responsibility for the non-toll bridges within its jurisdiction and required the Commission to utilize toll revenues to support all of its crossings.

¹ [2022 Annual Report](#).



Where does funding come from?

Project funds were a blend of cash on hand (generated from tolls) and bond proceeds that will be repaid with tolls. Tolls increased on January 1, 2024, from \$1.25 to \$1.50 for E-ZPass customers at all DRJTBC's toll crossings.

Funding for the operation, upkeep and maintenance of the Commission's bridges and related facilities is derived solely from revenues collected at the agency's toll bridges. The Commission doesn't receive federal or state tax subsidies.²

How do other aspects of the Scudder Falls project compare to those of the Abernethy Bridge project?

Like the Scudder Falls project, the improvements to the Abernethy Bridge include interchange improvements as well as bike and pedestrian upgrades.³ These enhancements combined with seismic resilience will have follow-on benefits for public transit. And like Scudder Falls, the Abernethy Bridge project will be funded, in part, by toll-backed bonds. There are differences between the two projects though, perhaps most notably that the DRJTBC had existing toll revenue on hand to pay for these projects in addition to anticipated revenue from bond proceeds.

5. What analysis, if any, was conducted on how the Elizabeth River Crossing affected public transit? When drivers diverted on the Elizabeth River Crossing, where did they go?

How are the Elizabeth River Crossings similar to the Abernethy Bridge area?

The Elizabeth River Crossings are a strong comparison to the Abernethy Bridge area, as there are a limited number of options for crossing the Elizabeth River. There are also substantial populations as well as significant economic activities on both sides of the river. This all contributes to high demand for a limited number of crossings with no alternatives.

Elizabeth River Crossings: Changes in travel patterns post-implementation of tolling

The Hampton Roads Transportation Planning Organization (HRTPO) obtained average weekday transit ridership data from Hampton Roads Transit for the five bus routes and one ferry route across the Elizabeth River that were impacted by tolls. An analysis of this data showed that most transit routes crossing the Southern Branch of the Elizabeth River experienced an increase in

² [2019 Annual Report](#).

³ The Scudder Falls project also included construction of noise-abatement walls similar to the sound walls that will be constructed near the southbound lanes of I-205 and Exit 9. Additionally, the Scudder Falls project included a third lane, like the original plans for the Abernethy Bridge. The third lane for the I-205 corridor is indefinitely postponed due to cost challenges, including the delay in toll revenue, increasing construction costs, and a desire to keep toll rates as low as possible, all of which impact the agency's ability to pay for this part of the project without additional funding sources.



ridership (12%-20%) during the first month after tolls were implemented (February 2014) but returned to prior levels the following month. Elizabeth River Ferry ridership remained mostly unchanged after the tolls were implemented.

The Gilmerton Bridge, South Norfolk Jordan Bridge and High Rise Bridge all saw changes in volume during different time periods of the day. The Gilmerton Bridge saw increases of 50% during AM Peak, Midday and PM Peak Periods. The South Norfolk Jordan Bridge (a toll bridge) saw an increase of 36% in the AM Peak Period and 48% in the Midday Period. The High Rise Bridge saw a 5% increase in the AM Peak Period, 11% in the Midday Period and a 4% decrease in the PM Peak Period.

TABLE 1 – Changes in Volumes – Pre-Tolling (May-Nov. 2013) to Post-Tolling (May-Nov. 2014) Conditions

Facility	Change in Volumes, May-November 2013 to May-November 2014					
	Weekday	AM Peak Period	PM Peak Period	Off Peak (Midday)	Weekend	Weekday Trucks
Midtown Tunnel	-3,166	-714	-901	-1,996	-1,296	-52
	-8%	-7%	-8%	-15%	-5%	-3%
Downtown Tunnel	-18,726	-2,696	-1,863	-6,575	-20,930	N/A
	-20%	-12%	-8%	-22%	-29%	N/A
Jordan Bridge	+3,221	+615	+353	+694	+2,136	+211
	+49%	+36%	+14%	+48%	+104%	+74%
Gilmerton Bridge	+10,138	+2,641	+3,678	+3,087	+8,611	+307
	+53%	+53%	+53%	+50%	+67%	+55%
High Rise Bridge*	+6,117	+964	-1,062	+2,808	+6,814	N/A
	+7%	+5%	-4%	+11%	+11%	N/A

* Represents September-November period due to data availability.

The combined weekday peak period delay of the tunnels and the two remaining free crossings in vehicle-hours delay was reduced by 32% after tolling began. While delays increased at the Gilmerton and High Rise Bridges by a total of 243 vehicle hours per day, delays at the tunnels were reduced by 1,826 vehicle hours in the peak periods of a weekday, a net reduction of 1,583 vehicle hours of delay each weekday.⁴

⁴ [Analyzing the Impact of Implementing New Tolls on Existing Roadway Facilities – The Hampton Roads Experience](#). Nichols and Belfield, 2015.

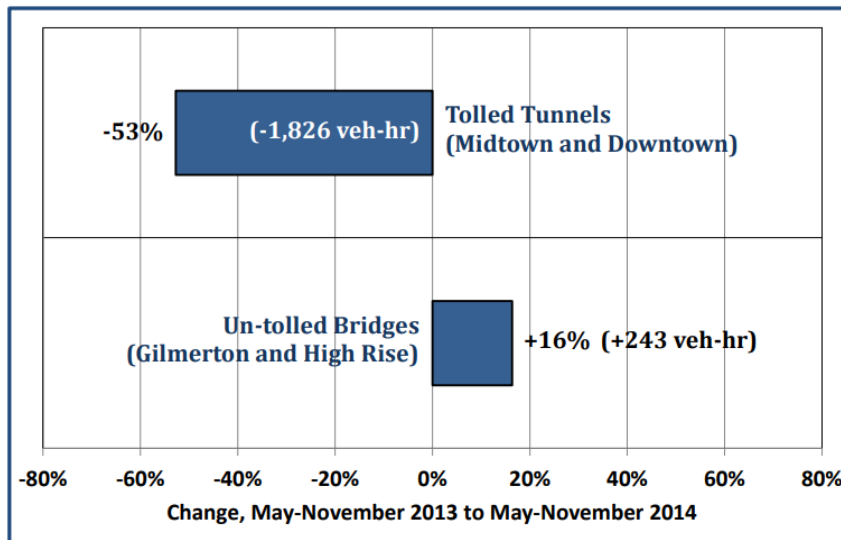


FIGURE 6 – Change in Weekday Peak Period Total Delays at Tolled and Un-tolled Crossings

6. How many vehicles need to be diverted to accomplish our tolling goals?

Neither of ODOT's two toll projects have a goal to remove a specific number of vehicles from the roadway. The individual toll projects have different goals and performance measures.

The purpose of the Regional Mobility Pricing Project (RMPP) is to manage congestion on I-5 and I-205 and raise revenue for projects and maintenance along these corridors. As we shared in our January 10, 2024 Special Subcommittee presentation, our roadways can only accommodate a limited number of vehicles. Congestion occurs when the number of vehicles exceeds the roadway capacity—when there are more people traveling on the road than the road can handle. To effectively manage congestion on I-5 and I-205, we are designing RMPP to achieve travel speeds of 45-55mph, which is where the roadway is most efficient, and the existing supply (roadway) can serve the most vehicles. While some travelers will move off the interstate and use other routes, many travelers will stay on I-5 and I-205 and pay the toll for a faster trip, and some will travel at another time of day, change their mode (including carpooling), change their destination, or combine trips.

The I-205 Toll Project is intended to pay for the seismic and operational improvements currently under construction on the Abernethy Bridge, using variable rate tolling.

The toll on the Abernethy Bridge is primarily intended to pay for construction on the bridge, but it will also use variable-rate tolls to offer some congestion management near the bridge. We are evaluating a variety of rate structures to determine how to best meet our revenue target while minimizing diversion impacts to the local system.



7. The third lane for I-205 was indefinitely postponed. How will ODOT differentiate between current diversion and that which is related to tolling?

Since there has never been pricing on I-205, there is no existing or previous toll diversion.⁵ While there has been potentially significant rerouting due to congestion on I-205, it is impossible to calculate or quantify the amount of rerouting and impossible to isolate that rerouting to conclude it was caused by I-205 congestion. Rerouting is just one possible reaction to a toll, and modeling combined with post-implementation monitoring will help identify how much this is happening.

Therefore, we cannot calculate the difference between what diversion or rerouting existed in 2010, what exists today, and what may occur under the proposed I-205 Toll Project. However, as discussed above, modeling can predict what toll diversion may occur because of the I-205 Toll Project, and monitoring will allow us to confirm the accuracy of our model forecasts and address any toll-related impacts after tolling begins.

Modeled data on toll diversion will be reported in the environmental documents, scheduled for release in Summer 2024 for the I-205 Toll Project and in 2025 for the Regional Mobility Pricing Project. The environmental analyses for the toll projects will focus on comparing future effects with and without the project.

The Supplemental Environmental Assessment, scheduled for release in Summer 2024, will detail how a single tolling point on the Abernethy Bridge will affect diversion rates. However, we expect that overall diversion will be reduced with a single toll on the Abernethy Bridge, compared to the larger project scope previously analyzed.

8. Are there examples of projects where transit and other options are expanded or funded in connection with tolling?

There are more than 300 toll programs across the country, and each has distinct features. While there are some similarities we can draw from to learn best practices or build trust in modeling, each program is developed to reflect the unique context of the community that it will serve. Sometimes these differences are regulated, like state law directing the use of toll revenue or the type of federal authorization for the program, and some differences reflect the outcome of community consensus during project development. Below, we provide examples of other toll projects that had concurrent expansions/improvements in transit and other travel options. A common theme among the following is that many of these tolling-related transit expansions or improvements involved multi-agency coordination and a mix of funding sources, including from the legislature, local funds, commercial investments, federal funds, and taxes.

⁵ Toll diversion is defined as diversion that occurs when travelers avoid a toll by changing any of the following or a combination of them: route (price vs. not priced), time of travel (peak to off-peak), destination, mode (driving to taking public transportation, biking, carpooling, etc.), combining trips (two to one trip).



I-66, Inside the Beltway⁶

- Description: To complement tolling, the Commonwealth of Virginia committed to using toll revenue to fund multimodal improvements.
- Authority: Virginia Department of Transportation (Project Sponsor and Toll Operator) Improvement projects are selected and administered by Northern Virginia Transportation Commission, in coordination with affected localities and transit agencies, under a 40-year agreement.
- Funding: Virginia committed \$10 million to fund the first 10 multimodal projects, which were projected to be operational when tolling began in late 2017. Toll revenues were identified to fund subsequent multimodal improvements benefiting I-66 users.

I-15 Express Lanes, San Diego⁷

- This was a multiphase project that began as an 8-mile reversible managed lane facility and now consists of 20 miles of managed lanes. One of the project's four primary goals was to "fund new transit and high-occupancy vehicle (HOV) improvements in the I-15 corridor." Toll revenue successfully funded a new express bus service called Inland Breeze.
- Authority: San Diego Association of Governments (SANDAG) & Metropolitan Transit System
- Funding: SANDAG received funding from the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA) for project planning and implementation. This was supplemented by additional funding from the I-15 transit service. State law limits the use of toll revenue to transit and HOV improvements for the I-15 corridor.

US 36 Express Lanes, Colorado⁸

- Description: The U.S. 36 Managed Lanes/Bus Rapid Transit (BRT) Project involves approximately 15 miles of improvements in the corridor, including the addition of one high-occupancy toll (HOT) lane in each direction; reconstruction of the general-purpose lanes; replacement of eight bridges; accommodations for BRT service and associated transit station improvements; a bikeway; and installation of Intelligent Transportation System equipment.
- Authority: Colorado High Performance Transportation Enterprise (HPTE) (Phases 1 & 2), Plenary Roads (Phase 2)
- Funding/Financing:

⁶ [Transform 66, Inside the Beltway Fact Sheet](#), 2017.

⁷ [I-15 Congestion Pricing Project/Phase II Year Two Overall Report](#) (San Diego State University, 2001), [Interstate 15 Express Lanes Middle Segment \(SR 56 to Centre City Parkway\)](#).

⁸ [US 36 Public Private Partnership Frequently Asked Questions](#); [U.S. 36 Managed Lanes / BRT Project, Denver, CO | Build America](#) (transportation.gov)



- Phase 1 – Dedicated regional transit sales taxes; Federal funds; Colorado Department of Transportation (CDOT); local government; Colorado Bridge Enterprise; TIFIA loan backed by toll revenue.
- Phase 2 – Direct expenditures from CDOT/HPTE; Federal funds; state funds; dedicated regional transit sales taxes; local government funds. Additional financing with a TIFIA loan; Private Activity Bond issue; commercial loan; equity from partners in concession; toll and other revenues from operating express lanes.
- The tolls will be used by the concessionaire to operate and maintain the managed lanes, reconstruct them when necessary, and repay its debt and equity contribution to the project. Excess toll revenues will be shared with HPTE and applied to the corridor in consultation with the local governments.

95 Express, Florida⁹

- Description: 95 Express runs approximately 21 miles in Miami, Florida. The express lanes are converted HOV lanes that allow single occupancy vehicles (SOVs) to use the lanes for a dynamically priced toll. Cross-county express bus service by Broward County Transit began the same month as tolling, January 2010. The project included other corridor enhancements including transit signal priority and improved bus service with associated pedestrian access accommodations.
- Authority: Florida Department of Transportation. The project was developed through the “Miami-Area Urban Partnership,” which consists of the Florida Department of Transportation, Miami-Dade/Broward County Metropolitan Planning Organizations (MPOs), Broward/Miami-Dade County Transit, Miami-Dade County Expressway Authority, and Florida’s Turnpike Enterprise.
- Funding: United States Department of Transportation; Federal funds; USDOT Urban Partnership Agreement (UPA) funds; State Legislative earmark; Federal stimulus funds; other federal, state, and local funds.

9. Can you provide additional information on the Nexus Projects?

What is the purpose of the Nexus Projects?

We are working collaboratively with the Regional Toll Advisory Committee (RTAC), regional transit partners, and staff from local and regional jurisdictions to identify the best transit, roadway, bicycle, and pedestrian projects to complement our toll projects on I-5 and I-205. We

⁹ https://www.fhwa.dot.gov/ipd/project_profiles/fl_95_express.aspx;
https://ops.fhwa.dot.gov/congestionpricing/value_pricing/pubs_reports/projectreports/sfl_95express_proj/index.htm;
https://ops.fhwa.dot.gov/congestionpricing/agreements/miami.htm?_gl=1*1t24lor*_ga*NTYxNzM2OTcyLjE3MDI0MDA0NTM.*_ga_VW1SFWJKBB*MTcwNzkyNjM4NC4zMCA4LjE3MDc5MjY5NDAuMC4wLjA.



have two parallel efforts underway. We are calling these efforts “Nexus Projects” and “Public Transportation Strategy.” Public transportation (transit) projects are covered by the Public Transportation Strategy (PTS), and all other projects are under the Nexus Projects list. These projects are, in many cases, ambitious and needed infrastructure investments to provide mobility options in the region within the context of a tolled system.

These projects will be among the efforts in the region that complement the toll system and could be considered for mitigation of diversion impacts and addressing equity concerns from tolling. Many of these projects address existing needs and gaps, but we need to also consider them in the context of tolling. Paired together, regional tolling and investments in the pedestrian, bicycle, roadway, and transit systems can support regional and state goals related to equity, mobility, and climate.

The Nexus projects and the final PTS projects and supportive services are intended to aid ODOT and regional partners as the toll program advances, funding opportunities become available, and strategic partnerships and investments are aligned. The project lists may change as funding and regional priorities and needs change.

How are the Nexus Projects being developed?

In 2023, we worked closely with partner agencies to develop eligibility definitions and draft criteria to evaluate the proposed projects. More than 50 PTS projects and 220 Nexus projects were submitted.

More discussion among partners is needed to determine how to select projects for implementation and, notably, how to fund them. In January, members of RTAC shared with the Oregon Transportation Commission that they don’t want higher toll rates in order to pay for additional nexus projects. The project list will be further refined in 2024 and 2025 once there is more clarity on assumptions, impacts, and revenue potential coming from parallel efforts, including:

- Public Transportation Strategy
- RMPP environmental review, including any required mitigation
- RMPP Level 2 Traffic and Revenue study
- Other funding sources

How do the Nexus Projects fit into the larger transportation system?

The toll program is one of the ways we are enhancing mobility and funding transportation improvements in the region, but it’s not the only way. Because there are many significant needs, the region will need to come together to figure out other ways to fund projects.



As part of toll system development, we will need to analyze the benefits and impacts of the toll system itself. When there are significant negative impacts, mitigation is required. Toll system mitigation, however, will not address existing mobility challenges in the system.

10. Does driver behavior differ regionally, and how does that factor into our tolling projects?

Yes. Driver behavior differs by region. What follows is an explanation of how the toll program will account for regional nuances in traffic patterns.

The toll program uses a “multi-resolution modeling approach.” While this process uses different models at increasing resolution (macro, meso, micro), they are all grounded in the same adopted regional assumptions for transportation network and land use projections.

Regional Travel Demand Model

The primary tool used to estimate regional multi-modal demand for the toll program is **Metro’s regional travel demand model**. It is the foundation for all subsequent traffic projections used in the analysis. This model is used widely for transportation and land use planning in the Portland metro area. It is specific to the region and reflects local geographies and transportation systems. It is important to use the adopted and maintained regional model for these efforts because it contains the approved projected land use forecasts and transportation system changes for the region and provides a consistent estimate of regional travel demand to assess all regional projects across agencies.

The Federal Highway Administration, Federal Transit Administration, and U.S. Environmental Protection Agency require that project analysis be carried out using methods and modeling tools that meet certain guidelines. Metro’s transportation model and its outputs are regularly peer-reviewed by modeling professionals from academia, consulting firms, and metropolitan planning organizations, as well as the Federal Transit Administration to ensure that they meet federal guidelines and meet or exceed the standard practices of other travel demand models used throughout the country.¹⁰

Dynamic Traffic Assignment Model

While the Metro regional model was used for daily diversion estimates, the peak period diversion estimates are based on the **Dynamic Traffic Assignment (DTA)** model, which was also developed by Metro. The DTA model uses the assumed land use and estimated trips from the regional model to consider more elements of the roadway system (e.g., more detailed

¹⁰ [Modeling services; Metro Transportation Modeling.](#)



roadway characteristics, traffic signals, vehicle flows and queues) and provide a more nuanced estimate of traffic volumes during congested periods.

The team used the DTA model to understand key performance measures (including queuing effects, delay, and travel time estimation) and the subsequent assignment of traffic volumes in the project study area. Using the DTA brings the modeled traffic estimates closer to the ground counts in the base year and reduces reliance on adjustment factors in both base and future years.

11. When people choose to reroute in other regions, they may be rerouted onto roads with additional capacity, but here they may be rerouted to roads without that additional capacity. How will ODOT address that?

The environmental analysis accounts for anticipated capacity of the alternative routes and evaluates the potential effects of vehicles rerouting to those alternative routes due to tolling. If the added traffic creates negative impacts, ODOT, working with FHWA, will evaluate the need for mitigation. If the added traffic does not create negative impacts (because the alternative route can handle the added traffic), then no mitigation is needed. As mentioned at the February 9 presentation, one of the first strategies is to avoid or minimize negative impacts.

Monitoring will allow us to address toll-related impacts after tolling begins. As part of implementing the monitoring plan, we will measure baseline conditions before tolling begins and compare to conditions after tolling starts to evaluate the effects of tolling on rerouting.

Toll system mitigation and monitoring, however, will not address existing mobility challenges in the system. Because there many significant needs, the region will need to work together to determine other ways to fund projects.

As mentioned above, we are working collaboratively with the Regional Toll Advisory Committee (RTAC), regional transit partners, and staff from local and regional jurisdictions to identify the best transit, roadway, bicycle and pedestrian projects to complement our toll projects on I-5 and I-205. Projects outlined in the Nexus and Public Transportation Strategy lists are, in many cases, ambitious and essential infrastructure investments that are needed to provide mobility options in the region within the context of a tolled system.

These projects could be considered for mitigation of diversion impacts. Many of these projects address existing needs and gaps, but we need to consider them in the context of tolling. Funding sources will need to be identified for those projects. If toll revenue is expected to pay for those projects, then toll rates would need to be increased accordingly—and members of RTAC have agreed they don't wish to raise toll rates on drivers in order to fund projects in the area.



Oregon

Tina Kotek, Governor

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As always, please let me know if I can answer additional questions or provide more information.

Thank you,

Lindsay Baker

Assistant Director – Government and External Relations

Oregon Department of Transportation